

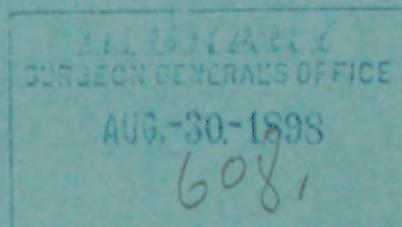
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BY

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FROM
THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES,
FEBRUARY, 1892.

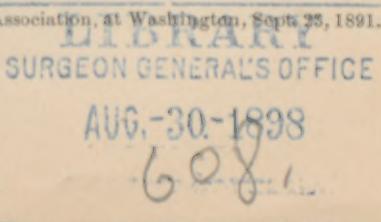
Reprinted from
The American Journal of the Medical Sciences, for February, 1892.

EXPERIENCE IN THE TREATMENT OF CHRONIC RINGWORM IN AN INSTITUTION.¹

BY LOUIS A. DUHRING, M.D.,
PROFESSOR OF SKIN DISEASES IN THE UNIVERSITY OF PENNSYLVANIA.

FOR the purpose of this communication it is not necessary to mention the name of the institution in which the experience about to be recorded was obtained. Suffice it to state that it was one of the largest and most favorably known in the country. I was requested by the board of trustees to take charge of the affected boys, and if possible to free the institution of the disease, which had long held sway there and was increasing rather than decreasing. Upon consultation with the attending physician, it was learned that ringworm had been prevalent for some years, and that lately it had been spreading in spite of care and attention on the part of physician and nurses. After an examination of all the suspected cases, among which were found a few cases of seborrhœa and eczema, it was found that there were forty-eight subjects affected with ringworm of the scalp, as demonstrated by the microscope, occurring in boys whose age ranged from eight to twelve, the average being ten. The disease in almost all instances was chronic, having existed in most cases from six months to three years, the average duration being about a year. All of the boys were inmates of the infirmary; were isolated, and had been under local, general and hygienic treatment at the hands of the attending physician. The institution was clean, and the hygiene, food, and the care of the patients was satisfactory, the attendants being faithful to their duties, so that there were no apparent defects in the management to which the prevalence of the disease, and more particularly its spread, could be traced. There is nothing special to be said as to the general condition of the patients, for while some were puny, with defective nutrition, others were up to the average, and a few seemed to be even robust. The majority, however, it must be said, inclined to be lean and scrawny, and were without much stamina. Out of the forty-eight cases thirty-two might properly be designated as "bad cases," all of these showing the disease extensively developed and in a chronic state. Some of these had been considered as cured at one time or another during the previous year, but sooner or later, after their dismissal from the infirmary, were returned with a recurrence of the disease.

¹ Read before the American Dermatological Association, at Washington, Sept. 23, 1891.



It is not necessary that the symptoms and the several forms of ringworm encountered should be dwelt upon here, interesting as the subject might be. It may, however, be briefly stated that many of the cases illustrated the worst possible features of the disease in its chronic stage, characterized by numerous discrete or aggravated erythematous, papular, follicular, chronically inflamed lesions, invading the scalp in the form of small and large areas. In some instances the whole scalp was more or less involved. The hairs were for the most part broken off close to the scalp, giving rise to light or dark puncta, the disease manifestly having its seat mainly in the deeper portions of the follicles. In other cases follicular scurfiness, with or without badly damaged or broken-off hairs, constituted the most striking feature. Follicular inflammatory papules, subacute or chronic in type, were also common, but a goose-flesh appearance of the scalp, and pustules, were of infrequent occurrence. As everyone knows who is familiar with the disease in its chronic state, the manifestations appear in varied forms and are difficult to describe. The lesions so characteristic of recently formed ringworm were altogether wanting, in place of which there existed a condition having its seat mainly in the deeper portions of the follicles, with comparatively little epidermic involvement of the surface. No cases of alopecia areata, or of any condition even suggestive of that disease, were encountered.

It is my intention to confine the paper to the subject of therapeutics, and more especially with the view of giving the results of the year's work with the several local remedies prescribed. Notes of each case were, in the first place, separately recorded, including the previous history as to duration, relapses, and the remedies employed; the character of the lesions and the amount of disease present; the tendency or not to inflammatory action; the nutrition of the skin, its behavior under treatment, and other peculiarities. Subsequently, with each examination, memoranda were made of the progress of the case and of the action of the remedies, together with the formulæ prescribed. These records were kept up throughout the course of the treatment, and constitute the data from which this summary is prepared.

The hair, as a rule, was clipped short about once a week, but in some cases the scalp was regularly shaved every few days. In either case the applications were brought into the closest possible contact with the follicles, chiefly by friction with oils and ointments. A few remarks may be made here as to depilation. The theory of this procedure in the treatment of ringworm is good, and should be put into practice, as far as practicable, in all cases. Where the lesions, however, are widely disseminated, occupying the greater part or almost the whole scalp, and, moreover, where the hairs are brittle and broken off close to or even below the surface of the scalp, it becomes almost an impossibility. Add

to this the time consumed in the operation, and that even skilled operators can show but meagre results for an hour's work upon such a scalp, it will be found that the application of the proceeding is limited and adapted only to suitable cases. In some of the more chronic and worst cases it was abandoned as being impracticable.

Early in the treatment it became manifest that many of the cases represented the most rebellious types of the affection, and that perseverance, powerful parasiticides, and time would be required to cure the disease, which was literally firmly rooted. In the selection of remedies and the formulæ, due regard was given to the age, development, complexion, and general nutrition of the patient. Those of dark complexion, as was to be expected, tolerated much stronger formulæ than those with light hair. From time to time active treatment had to be suspended in order to note what progress had been made upon the disease, and to allow the inflammatory symptoms due to the remedies to subside.

The more important remedies and the formulae prescribed, including the combinations and the strength of several drugs used, may now be referred to. If the list seem a long one, it should be borne in mind that not only was the number of patients large, but that owing to the obstinacy of the disease and the long period most of the cases were under observation, there was ample opportunity for experimentation. Moreover, it was noted that a change of remedy was sometimes followed by good results. I do not wish, however, to convey the idea that frequent change of treatment is to be recommended; on the contrary, having once selected a remedy of recognized worth, it is best to persevere with it until positive results, favorable or unfavorable, have been obtained.

From time to time during the treatment it became necessary to use cleansing agents, with the view of clearing the surface of scale, crust, and débris, the result either of the disease itself or of the remedies applied. For this purpose a mixture of soft-soap and sulphur was generally used, preceded by inunctions with carbolized oil; in other cases, where the crusting was excessive, adhérent, or painful, a flaxseed-meal poultice was applied for a short period. This latter was sometimes found to be especially beneficial, not only in loosening the crusts, but also in subduing inflammation. Occasionally the irritation and inflammatory action set up by the stronger remedies was such that for a few days bland or soothing applications were demanded. Of these, ointments composed of a half-drachm of precipitated sulphur to the ounce of oxide of zinc ointment, and equal parts of oxide of zinc ointment and petrolatum, proved beneficial. A salicylic acid paste (of starch and petrolatum), ten or twelve grains to the ounce, and weak ointments of calomel and of white precipitate, were also prescribed with benefit. Lotions, more especially such as contained sulphurous acid and hypo-

sulphite of sodium, were found useful where kerion had developed. Lotions, however, are not to be commended in other forms of the disease.

Reference may now be made to the parasiticides, and in order to present the subject as clearly as possible, and to avoid repetition, the several drugs will be taken up under separate headings.

Carbolic acid: This was used extensively in the form of an ointment and as a mixture with olive oil and with glycerin, in strength varying from a half-drachm to two drachms to the ounce. It was ordered in a large number of cases in the earlier period of the treatment. In some cases entire dependence was placed upon its virtue as a parasiticide, while in others it was prescribed in combination, as follows: Carbolic acid, $\frac{3}{5}$ - $\frac{3}{5}$ j; ointment of nitrate of mercury, $\frac{3}{5}$ j- $\frac{3}{5}$ iv; sulphur ointment, $\frac{3}{5}$ jj- $\frac{3}{5}$ v. In a few cases tar ointment was substituted for the mercurial. As a parasiticide in this disease, the experience in this series of cases would lead me to give carbolic acid a comparatively low rank. It did not prove, either alone or in the combinations quoted, so curative as some other drugs. It was surprising to note the strength in which it could be applied without provoking much cutaneous disturbance, this latter taking the form chiefly of more or less extensive desquamation in the shape of large areas of raised, blistered epidermis.

Tar was prescribed mainly with carbolic acid, or with sulphur or ointment of nitrate of mercury, as already noted, but nothing favorable can be said of it, even for the purpose of allaying inflammatory irritation or scurfiness.

Iodine was prescribed as a tincture, in the officinal and in double that strength, and also in the mixture known as Coster's paste, consisting of two drachms of iodine to one ounce of oil of tar. This was employed at one period freely, but the results were disappointing. While the mixture is efficacious in recent or mild cases, where the fungus is not deeply lodged, it fails in chronic cases, I believe, because it does not remain in constant contact with the epidermis; and, further, for the reason that, from the nature of the application, it cannot penetrate into the follicles. It is a discutient, and as a consequence the epidermis is soon raised and gradually thrown off, during which period of exfoliation there is practically no remedy in contact with the scalp. This explanation applies to all remedies that act in this manner—for example, to carbolic acid. The constant application of the parasiticide, that the same may enter and penetrate the follicles, I believe to be the desideratum in the treatment. To this end oils and ointments are preferable. Before leaving iodine, reference may also be made to a formula, consisting of iodine, $\frac{3}{5}$ ss; carbolic acid, $\frac{3}{5}$ j; and glycerin, $\frac{3}{5}$ j, which acted as a discutient, raising the epidermis in large masses, but, like the other preparations, was not found efficacious.

For some of the cases the oleate of copper was ordered in the form of an ointment of petrolatum, one and two drachms to the ounce. After a fair trial it was abandoned without having exerted apparently any beneficial influence upon the disease. It neither irritated the scalp nor in any degree allayed the symptoms. It seemed to possess, as far as could be noted, no curative merits.

The mercurials were at one period fully prescribed, chiefly in combination with sulphur and carbolic acid. Some of the preparations, however, were employed alone, such as ointment of the nitrate of mercury and oleate of mercury. This latter was given a faithful trial in from 10 to 30 per cent. strength—the results, however, not meeting expectations. Some of the other salts of mercury, as the red and yellow oxides, white precipitate and calomel, were also tried, but nothing favorable can be said of them as parasiticides. Calomel, however, was found of value in subduing inflammatory action, from whatsoever causes due. With the ointment of the oxide of zinc, a half-drachm to the ounce, it was found serviceable when active parasiticides would not be tolerated. Corrosive sublimate, so useful in the localized and early stages of ringworm, was not prescribed, for the reason that, owing to the disseminated character of the disease and the large extent of surface invaded in almost all the cases, it was not deemed a safe remedy.

Croton oil, in sluggish cases, proved especially useful in provoking acute, purulent, inflammatory action. After this had been well established, the milder parasiticides, as the sulphur ointments and lotions, were advantageously prescribed. The oil was usually applied with olive oil, one part to three parts, which strength proved to be safe and efficacious. This would generally produce pustulation after one or two applications at intervals of twelve or twenty-four hours. In spite of care in the mode of application, only a thin layer being put on, the action sometimes would spread beyond the line intended. In one instance only was pain complained of. After free follicular pustulation had been established, in from two to four days, an ointment composed of equal parts of petrolatum and oxide of zinc ointment, or a mild sulphur or calomel ointment, was applied to control the suppuration. In two or three cases only was kerion set up, and it seems remarkable that this form of inflammation should not have occurred oftener in the whole series of cases. In no instance did it occur spontaneously as a symptom of the disease, but resulting from the action of the oil, it was noted that the disease was benefited, as was to be expected. As stated, however, this pathological condition was difficult to produce, much as its presence might be desired. No unfavorable results followed the use of the oil, although in one or two cases destruction of the follicles in some localities seemed imminent; but I believe even in these cases the hairs

eventually grew out again. On several occasions the oil was applied in the form of a moulded wax stick, but the desired action could not always be obtained, and the method was abandoned for the diluted oil and the brush. Cantharidal blistering fluid was now and then used, but possessed no special virtues. Cantharidal collodion was tried as a vehicle for such remedies as chrysarobin, but this mode of application cannot be commended. It may be referred to in passing that notwithstanding the extensive and severe cutaneous irritation and artificial inflammation started and kept up by the remedies, prolonged in some instances in more or less severe degree for months, no case of eczema was developed. In no instance did this disease, from whatsoever cause produced, complicate the ringworm. The observation is one of interest, bearing upon the etiology of eczema as concerns its local origin.

I come now to speak of two well-known parasiticides, from both of which good results were obtained, namely, sulphur and chrysarobin. They are, of course, different in their action on the skin, one being comparatively mild, the other a powerful remedy. They were often advantageously prescribed to supplement each other, especially the weaker after the stronger.

Sulphur may be first considered. It was used mainly in the form of ointment, varying in strength from one to three drachms to the ounce. As a weak ointment it was found to be especially serviceable after the stronger remedies, and more particularly in clearing up scurfiness. This condition, scurfiness, was a common and embarrassing symptom—its precise nature, whether parasitic or not, being at times difficult to determine. In most cases it proved to be simple or non-parasitic, but it was nevertheless a persistent and troublesome condition. As has just been pointed out, it yielded more readily to weak sulphur ointment than to any other remedy used. In the strength of two or three drachms to the ounce, it was valuable in those cases where, for certain reasons, a safe remedy was demanded. It proved an efficient, mild parasiticide. As has been already referred to in the earlier part of this paper, it was also prescribed in various combinations, as with soap, and with tar ointment, and carbolic acid, but it was thought to be more useful employed alone.

The most active and potent parasiticide employed, however, was chrysarobin. At one time or another it was in use upon the greater number of the patients, and as it can be spoken of in terms of praise, a short account of it may be given, especially as my experience with it has been different in certain particulars from that of some other observers. It was prescribed in twenty-nine cases. In seven, more or less irritation of the scalp occurred, while in twenty-two there was none. By irritation is meant sufficient local disturbance to demand the temporary suspension of the drug. The strength varied from fifteen

grains to two drachms to the ounce of ointment—the weaker ointment, however, having been seldom employed. The strength in common use was one drachm to the ounce. Some of the patients, it is unnecessary to state, tolerated a much stronger ointment than others; thus, in one case nine applications of a two drachm to the ounce ointment were made without causing swelling or inflammation of either the scalp or face. In another instance ten applications of the same ointment gave rise to no inflammation of the eyes. Several cases were recorded in which the eyes escaped even though other parts of the face were slightly inflamed and stained. In one instance only did œdema of the whole face occur, and this after the fifth day. In one patient an ointment of one drachm to the ounce was applied to the whole scalp without giving rise to undue inflammation. These cases are alluded to for the purpose of showing how well borne was the drug in most cases. There was no reason to doubt that it was of good quality. Unpleasant burning sensations and heat were noted in only a few instances. On one occasion pain in the head was complained of, although the scalp did not look painful or even sore, while in some cases the whole scalp became apparently inflamed without giving rise to either heat or pain. In some cases, too, the forehead and sides of the face were stained without involving the eyes. In only one case did the glands of the neck become markedly engorged. The inflammation of the scalp passed off in the form of desquamation of a peculiar character, consisting of large, papery masses of scale. When the ointment used was strong, the scale would come away in large and thick patches. From my experience with the drug in these cases—which, be it remembered, were all chronic and had long been subjected to strong remedies of one kind or another—there would seem to be not much danger from its employment if applied *under the supervision of the physician*, and if due care be exercised in avoiding the face, in making the applications sparingly, and in gradually increasing the strength. It is a remedy always to be handled with caution. It is remarkable that so little excessive cutaneous disturbance and so few complications were noted. It proved the most valuable parasiticide in the list. In the form of ointment it possessed power to penetrate the follicles and to destroy the life of the fungus, and in this latter power lies its great worth. It may be mentioned that in no instance was chrysarobin used in combination with other remedies; therefore, such results as were obtained may be attributed directly to it.

In conclusion, I would say that it should invariably be applied in the smallest possible quantity and be well rubbed in with a bit of cloth or a mop. Used with caution, the staining of the skin of both patient and nurse may be reduced to a minimum.

In the class of cases of ringworm under consideration, all treatment

at best is slow, but I have no hesitation in giving the preference to chrysarobin. It is the most potent remedy at our command, and the observations and experience here recorded demonstrate that it is not only a valuable but a comparatively safe remedy, and that with due precaution and care it may be applied to the scalp, under the supervision of the physician.

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